

ABSTRACT

To greatly increase the storage density of a storage apparatus, an electron beam E emitted from a cold cathode 101 is accelerated by an accelerating electrode 102, caused to converge by a convergence electrode 103, deflected by a deflection electrode 104 and applied to a minute region of a storage film 105. The storage film 105 includes, for example, a phase change film 105a. The film is rapidly heated and cooled to change into an amorphous state upon irradiation with an electron beam E with high energy, while being gradually cooled to change into a crystallized state upon irradiation with an electron beam E with approximately intermediate energy, thereby storing data. Upon irradiation with an electron beam E with low energy, the potential difference between a detection electrode 105b and an anode 105c is detected depending on the state, i.e., the amorphous or crystallized state, thereby reading stored data.